AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for the determination of ~~an analyte~~ a nucleic acid in a sample, said method comprising:

~~(a) providing a catalytic polynucleotide;~~

~~(b)~~ (a) contacting ~~said~~ a catalytic polynucleotide, that is a DNAzyme complexed with hemin and that has peroxidase activity, with said sample so that the catalytic polynucleotide ~~may bind~~binds to the ~~analyte~~nucleic acid in the sample;

~~(c)~~ (b) providing assay conditions ~~such~~ so that said catalytic polynucleotide produces an optically detectable signal in the presence of the nucleic acid~~analyte~~; and

~~(d)~~ (c) detecting said signal, thereby determining the presence of the nucleic acid ~~analyte~~ in the sample.

2-4. (Cancelled)

5. (Currently Amended) The method of claim 1, wherein said optically detectable signal is produced by a light emitting reaction.

6. (Currently Amended) The method of claim 5, wherein said light emitting reaction is produced using luminol as a substrate.

7. (Currently Amended) The method of claim 1, wherein said optically detectable signal is produced by production of a colorimetric product.

8. (Currently Amended) The method of claim 7, wherein said colorimetric product is produced using the substrate 2,2'-azinobis (3-ethylbenzothiozoline)-6-sulfonic acid (ABTS).

9. (Currently Amended) The method of claim 1 further comprising the following step: ~~(e)~~ (d) comparing the optically detectable signal detected in step ~~(d)~~ (c) with a calibration scale, thereby quantifying the amount of nucleic acid ~~analyte~~ in the sample.

10. (Currently Amended) The method of claim 1 wherein the nucleic acid ~~analyte~~ is immobilized to a solid surface.

11. (Cancelled)

12. (Currently Amended) The method of claim 1, wherein a plurality of catalytic polynucleotides are bound to a bead-like particle.

13-14. (Cancelled)

15. (Withdrawn) A method according to claim 1 for the detection of telomerase in a sample, the method comprising:

(a) providing a primer for telomerase activity immobilized on a solid surface;

(b) contacting the sample with said solid surface in the presence of deoxynucleoside triphosphoric acids (dNTP's), under conditions enabling formation of a telomere repeat unit;

(c) adding a catalytic polynucleotide, attached to a sequence complementary to the telomere repeat unit under conditions that allow hybridization of said sequence to the telomere repeat unit;

(d) removing unbound catalytic polynucleotide;

(e) providing substrates for the catalytic polynucleotide to produce an optically detectable signal; and

(f) detecting said signal, the signal indicating the presence of telomerase in the sample.

16. (Withdrawn) A method for detection of an analyte being one member of a complex forming group in an assay sample, the method comprising:

(a) providing a pre-catalytic polynucleotide comprising a catalytic polynucleotide moiety attached to an inhibitory moiety comprising another member of the complex forming group, said inhibitory moiety in the absence of the analyte sterically

hindering the catalytic activity of the catalytic polynucleotide while in the pre-catalytic complex, and said steric hindrance being removed upon binding of the inhibitory moiety to the analyte;

(b) contacting said pre catalytic complex with said assay sample under binding conditions;

(c) providing assay conditions which allow the catalytic polynucleotide to catalyze a reaction yielding an optically detectable signal; and

(d) detecting said signal, thereby detecting the presence of the analyte in the assay sample.

17. (Withdrawn) A method according to claim 16 for the detection of telomerase in a sample, the method comprising:

(a) providing a pre-catalytic polynucleotide comprising a catalytic polynucleotide attached to an inhibitory moiety, said inhibitory moiety comprising a sequence which is complementary to a telomere repeat unit, the inhibitory moiety, in the absence of the telomere repeat unit, inhibiting the catalytic activity of the catalytic polynucleotide while in the pre-catalytic polynucleotide, the pre-catalytic polynucleotide further comprising a primer for telomerase elongation;

(b) contacting the pre-catalytic polynucleotide with the sample in the presence of dNTPs and under conditions enabling formation of one or more telomere repeat units;

(c) providing substrates for the catalytic polynucleotide; and

(d) detecting an optically detectable signal of the catalytic polynucleotide, detection of the signal being indicative of the presence of telomerase in the sample.

18. (Withdrawn) A method for detection of telomerase activity in a sample the method comprising:

(a) providing a primer for telomerase activity immobilized on a solid surface;

(b) contacting the sample with the immobilized primer in the presence of dNTP's, under conditions enabling formation of a telomere repeat unit;

(c) adding a catalytic polynucleotide, attached to a sequence complementary to the telomere repeat unit;

(d) removing unbound catalytic polynucleotide;

(e) providing substrates for the catalytic polynucleotide; and detecting the presence of catalytic products of the catalytic polynucleotide, the products indicating the presence of telomerase activity in the sample.

19. (Withdrawn) A method for detection of the presence of catalytically active telomerase in a sample, the method comprising:

(a) providing a pre-catalytic polynucleotide comprising a catalytic polynucleotide attached to an inhibitory moiety, said inhibitory moiety comprising a sequence which is complementary to a telomere repeat unit, the inhibitory sequence, in the absence of the telomere repeat unit, inhibiting the catalytic activity of the catalytic polynucleotide while in the pre-catalytic polynucleotide, the pre-catalytic polynucleotide further comprising a primer for telomerase elongation;

(b) contacting the pre-catalytic polynucleotide with the sample in the presence of dNTPs and under conditions enabling primer elongation by telomerase;

(c) providing substrates for the catalytic polynucleotide; and

(d) detecting the presence of catalytic products of the catalytic polynucleotide, detection of the products being indicative for the presence of telomerase in the sample.

20. (Withdrawn) The method of claim 19 comprising the further step between steps (b) and (c) of providing a co-factor required for the catalytic polynucleotide activity.